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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,320	01/27/2004	Manfred Fuchs	24,577-26US	9408

7590 04/24/2006

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EXAMINER	
RAMIREZ, JOHN FERNANDO	
ART UNIT	PAPER NUMBER
3737	

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,320	FUCHS ET AL.	
	Examiner	Art Unit	
	John F. Ramirez	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

After a review of applicant's remarks, all necessary changes to the claims have been entered.

Applicant's arguments filed February 15, 2006 have been fully considered but they are not persuasive. Applicant's alleges on page 6 of the amendment, that the Ohyu et al. reference does not teach or suggest that the processing or filtering step is never adjusted based on the results of the source reconstruction. However, the examiner of record respectfully disagrees with applicant's comments. In Figures 7, 10, 12 and related description respectively and in column 13, lines 30-65, the specifications of the Ohyu et al. patent specifically states:

> The foregoing steps S6 and S7 are repeated by required times (Step S8).
>
> Furthermore, in the modification processing of the distributions of both excitation onset times and action potential amplitudes at Step S9, the distributions of both excitation onset times and the distribution of action potential amplitudes set on the heart model is finally modified, based on the values repeatedly calculated at Step S8, such that differences between the magnetocardiogram measured at Steps S1 and S2 and that calculated at Step S7 becomes a smallest value. A practical way of the modification depends a non-linear optimization algorithm adopted.
>
> In the error calculation at Step S10, an error e is calculated that shows how much difference exists between the magnetocardiogram for the QRS interval calculated at Step S7 and the magnetocardiogram for the QRS interval obtained via processing at Steps S1 and S2. For example, when assuming that a magnetocardiogram measured for channel i at j-th time instant of B_{ij} and a magnetocardiogram calculated is C_{ij}, an error $\bar{e}$ is obtained by the following equation:
>
> $$e = \sum_{i,j} (B_{ij}/b - C_{ij}/c)^2, \quad (3)$$
>
> where b is a root-mean-square B_{ij} and c is a root-mean-square of C_{ij}.
>
> In analyzing the distributions of both excitation onset times and action potential amplitudes, the foregoing steps S6 to S10 are repeatedly executed by desired times required by an adopted non-linear optimization algorithm (Step S11). Thus the distributions of both excitation onset times and action potential amplitudes within the ventricles are obtained.
>
> Data of the distributions thus-obtained are then displayed on the display 14*d* (Step S12).

Based on the above evidence, the method and system disclosed by Ohyu et al. teaches or suggest that the processing or filtering step is never adjusted based on the results of the source reconstruction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 7-11, 13-15, 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohyu et al. (US 6,187,032).

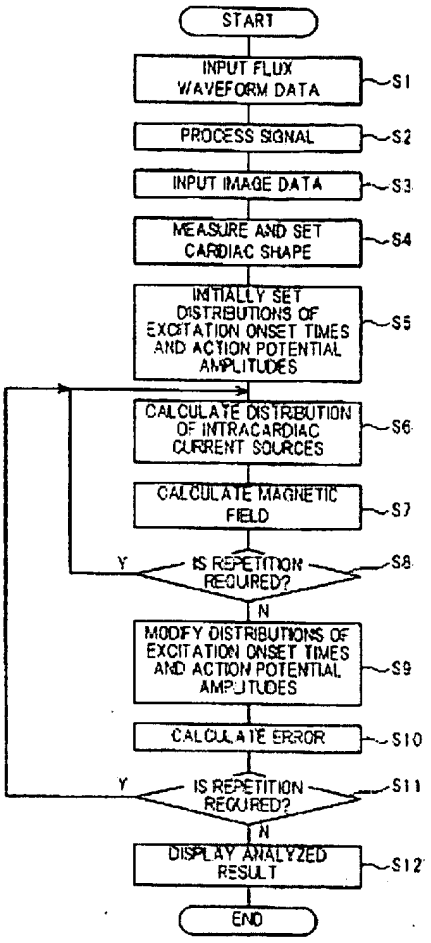

FIG. 7

In regards to claims 1, 2, 7-11, and 12, Ohyu et al. discloses a method for acquiring a first electromagnetic physiological signal, filtering the signal for a latency range (col. 11, lines 1-8), performing a source reconstruction for the signal (Fig. 7, steps S5, S6, S7), acquiring a second electromagnetic physiological signal while the source reconstruction is being performed on the first electromagnetic signal, performing the source reconstruction includes computing a single equivalent current dipole (col. 3, lines 56-63) , using a concentric sphere volume conductor model (Fig. 7, step S7), using a Boundary Element Method (BEM) volume conductor (Fig. 7, step S7), using a Finite

Element Method (FEM) model (col. 13, lines 16-30), averaging the filtered data (col. 11, lines 1-8), applying a dipole onto an anatomical image, creating a scatter plot of dipole locations (Figs. 2,3, and 17).

With respect to claims 14, 15, 18, and 19, Ohyu et al. discloses an apparatus comprising a sensor for acquiring an electromagnetic physiological signal (Fig.4, col.10, lines 31-40), a signal processing circuit in communication with the sensor (Fig.4, col.10, lines 31-66 – col.11, lines 1-8), a processor in communication with the signal processing circuit and configured to support multiple threads of execution with one thread being a measurement module and a second thread being a source reconstruction module (col. 12, lines 4-20), a display showing source reconstruction results overlayed onto anatomical data (col. 4, lines 10-36), wherein the sensor acquires ECG and MCG data (col. 22, lines 38-54).

With respect to claim 20, Ohyu et al. shows in Figure 7 a method of testing comprising the steps of: acquiring an electromagnetic physiological signal through a test setup, determining the latency of the signal, performing a source reconstruction of the data within a predetermined latency range, and using the source reconstruction to modify the test setup.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-6, 13, 16 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Ohyu et al. (US 6,187,032) in view of Kiyuna (US 6,073,040).

Ohyu et al. teaches all the limitations of the claimed subject matter except for mentioning specifically the step of performing the source reconstruction that includes computing a moving dipole, a rotating dipole, a regional dipole, a fixed dipole, comprising a signal to noise analysis of the required neurophysiological data, and wherein the sensor acquires MEG and EEG data.

However, the steps of (1) of performing the source reconstruction that includes computing a moving dipole, a rotating dipole, a regional dipole, a fixed dipole, (2) comprising a signal to noise analysis of the required neurophysiological data, and (3) wherein the sensor acquires MEG and EEG data are considered conventional in the art as evidenced by the teachings of Kiyuna (US 6,073,040).

The Kiyuna patent teaches the steps of performing the source reconstruction that includes computing a moving dipole, a rotating dipole, a regional dipole, a fixed dipole, comprising a signal to noise analysis of the required neurophysiological data, and wherein the sensor acquires MEG and EEG data.

Based on the above observations, for a person of ordinary skill in the art, modifying the method disclosed by Ohyu et al., with the above discussed enhancements would have been considered obvious because such modifications would

have provided an electrophysiological activity estimation method to estimate the number of dipoles with accuracy of active areas of a selected part of a living body.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JFR
04/14/06

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